

## Sequence Listing

&lt;110&gt; ITO, Yoshitaka

TAKAMIZAWA, Kazuhiro

IWAHASHI, Hitoshi

5

<120> METHOD OF JUDGING BIOLOGICAL ACTIVITY IN BIOREMEDIATION SITE AND  
POLYNUCLEOTIDE FOR DETECTING MICROORGANISM TO BE USED THEREIN

&lt;130&gt; 10873.1940USWO

10

&lt;140&gt; New Application

&lt;141&gt; 2006-08-23

&lt;150&gt; PCT/JP2005/003175

&lt;151&gt; 2005-02-25

15

&lt;150&gt; JP application No.2004-50082

&lt;151&gt; 2004-02-25

&lt;150&gt; JP application No.2004-50083

20

&lt;151&gt; 2004-02-25

&lt;160&gt; 118

&lt;170&gt; PatentIn version 3.3

25

&lt;210&gt; 1

&lt;211&gt; 742

&lt;212&gt; DNA

&lt;213&gt; Dehalospirillum multivorans

&lt;400&gt; 1

30

aagtcgtaac aaggtaaccg taggagaacc tgcggttgga tcacctcctt tctagagtat

60

aggggcacta tctcacaatg gtgctccggc gagcatagct agggaagctt atttagtttt 120  
 gagagattga atgaaaaagg ggcttatagc tcagggtggt agagcgtacc cctgataagg 180  
 5 gtaaggtcag aggttcgagt cctcttaagc ccaccatggg gaattagctc agctgggaga 240  
 gcgcctgctt tgcacgcagg aggtcagcgg ttcgatcccg ctattctcca ccatttttta 300  
 10 gagaaatggt gaaagattgc caagagacat tgtagtgag aatgaagaca caatgtctaa 360  
 tataagaaca atttaggttg tttttatatt agacttttta gtctaagttt atgttctaca 420  
 atttagaata cgacgctttg tgttgtgctg taggtttggt tctttaagat agctttgcta 480  
 15 tctggtgaaa gaacataaag atgttattta atttattatt gtcaaagtca acaaaacgca 540  
 aaaaaaaca tttacaactt gttagatggt ttacatttaa taaggagtg aaatgtgcat 600  
 20 tagaatacaa ataggaagc tattaagagc gaatggtgga tgcctaggct gtaagaggcg 660  
 atgaaggacg tactagactg cgataagtta cggggagctg tcaagaagct ttgatccgta 720  
 aatttccgaa tggggcaacc ca 742

25

&lt;210&gt; 2

&lt;211&gt; 527

&lt;212&gt; DNA

30 &lt;213&gt; Desulfitobacterium frappieri

<400> 2

aagtcgtaac aaggtagccg tatcggaagg tgcggctgga tcacctcctt tctaaggaga 60

5 catgttcact ctggaagtga gcatatccta aggtcgatgc tttgaaggac gtcacggaag 120

agatgaagtg aaacggttca aagctggaga agtctgaaga gacttcgaaa tgccgaagag 180

gcaaagcagg ggaaatctgc ataagatgac cctgaaatcg agtcaaacct gttcaagcgc 240

10 aagcttactt gttgtttagt tttgagggac cagcaatgga aactcattat ttttttgacc 300

aaaagtcaag aaaaactggt ctttgaaaac tgcacagaga agaaaaaact gtaatttagg 360

15 ataacatctg aaaaacctga atgtggcgga gacgtttggt caagctacta agggcggtacg 420

gtggatgcct aggcgctaag agtcgaagaa ggacgcggcg agcggcgaaa cgccacgggg 480

agcagtaagc atgctttgat ccgtggatat ccgaatgggg caaccca 527

20

<210> 3

<211> 478

<212> DNA

25 <213> Actinomycetales Sm-1

<400> 3

aagtcgtaac aaggtagccg taccggaagg tgcggctgga tcacctcctt tctaaggagc 60

30 aactcccgtc ggtgggtcac acaggtgact ccgccacggg cagagccatt tcggattcac 120

acgtaatccg gtggtgctca tgggtggaac gctgacagct acttctcgtc cgggtcccgt 180  
 ttctgtgcgg gatccgagga gttatatcgg tgcactgttg ggtcctgaga gaacacgcga 240  
 5 gtgttttgtc agcgacgatg atccgcgaaa caagaggaca tggttttctt gcggtagggg 300  
 ttgttgtgtg ttgtttgaga actgcacagt ggacgcgagc atctttgttg taagtgttta 360  
 10 tgagcgtagc gtggatgcct tggcaccagg agccgatgaa ggacgtggga ggctgcgata 420  
 tgcctcgggg agctgtcaac cgagctgtga tccgaggatt tccgaatggg gcaaccca 478  
 15 <210> 4  
 <211> 478  
 <212> DNA  
 <213> Rhodococcus rhodococcus  
 20 <400> 4  
 aagtcgtaac aaggtagccg taccggaagg tgcggctgga tcacctcctt tctaaggagc 60  
 aactccttgc tcggaccagc acacaggtgc cgggggagcg aggcagagcc atttcggatt 120  
 25 cacacgtaat ccggtggtgc tcatgggtgg aacgctgaca gtcacaccg cgcggaagg 180  
 acccgagtgt cttctgcgg tggttatatc ggtgcactgt tgggtcctga gagaacacgc 240  
 gagtgttttg tcagcgacga tgatcgggaa cgaaggggtt gtttcttctt ccggtaccgg 300

ttgttggtg ttgtttgaga actgcacagt ggacgcgagc atctttgttg taagtgttta 360  
 tgagcgtacg gtggatgcct tggcaccagg agccgatgaa ggacgtggga ggctgcgata 420  
 5 tgcctcgggg agctgtcaac cgagctgtga tccgaggatt tccgaatggg gaaacca 478  
  
 <210> 5  
 <211> 952  
 10 <212> DNA  
 <213> Xanthobacter flavus  
  
 <400> 5  
 aagtcgtaac aaggtagccg taggggaacc tgcggctgga tcacctcctt tctaaggacg 60  
 15 atccctcagt attgagactt cggctctgat ctatcggatc tcttcagaaa catcagccgg 120  
 acataggtgg aaacatcatg atctggcatt ggccgggacac cgccgtcttc gtttctcttt 180  
 20 cttcgcggac aagcttgacg cccaggttgc ggtcctttgg actgcgttcc ggtttcgggc 240  
 ctgtagctca ggtggttaga gcgcaccctt gataaggggtg aggtcggacg ttcgagtcgt 300  
 cccaggccca ccaccatcag acagttcttg cctgcgcctc atgtccgaag cttcgcgaac 360  
 25 tctcgcctgt ggcacctgt gatggggcca tagctcagtt gggagagcgc gtgctttgca 420  
 agcatgaggt cgtcggttcg atcccgtctg gctccaccat tcttcttttc ttgaggaaga 480  
 30 tgatggcagg gtggtttgcg ctcggctcct ttgagtgaag gctcttgggg tcttgagcgt 540

cttgtccgcg aatatctgtt tcgcatgttc catcatgccg gtctccggcg gaacatgcac 600  
 ggctgtatga catcgtgaat agggcattga tcgactgtac cgtggcaaca cggtcgggtc 660  
 5 gtggggaagg tggcgacacc ttctgatgcg atcattgggt gctgaccgca ccattgtcga 720  
 caatgcgaag ctggtctttt caaagaagac gtcgaagccg tccggccggg agcaatcctg 780  
 10 gtgcgggcct ctgccgaggg gtgggcatcg acgatgagaa cgatcaagtg tcttaagggc 840  
 attcgggtgga tgccttggcg ctaagagggc aagaaggacg tgatacgctg cgataagctt 900  
 cggggagccg cgaatgggct ttgatccgga gatttccgaa tggggcaacc ca 952  
 15  
 <210> 6  
 <211> 579  
 <212> DNA  
 20 <213> Mycobacterium L1  
 <400> 6  
 aagtcgtaac aaggtagccg taccgaaggt gcggctggat cacctccttt ctaaggagca 60  
 25 ccacgagacc tggccggccc gtaaatcgcg ggatcagccg attgtcaggc gattcgttgg 120  
 atggcccttt cacctgtagt ggggtgggggt ctggtgcacg acaagcaaac gaccaggatg 180  
 gggaccttcc ttgtgggggt tgtctggtgc tgccaaacac actggtgggc tttgagacaa 240  
 30

## SUBSTITUTE SPECIFICATION

caggccccgtg cccgggtttc cgggtggctc cgcggtggtg gggtcggcgt gttgttgcct 300  
 cactttggtg gtgggggtg gtgtttgatt tgtggatagt ggttgcgagc atctagcacg 360  
 5 caaatgtggc tctcgaggct ttcgggtctg gggggtgtgt ttgtgtgctt ttgatgtgca 420  
 gtttcttttt tcgaattggt tttttgtgtt gtaagtgttt aagggcgcat ggtggatgcc 480  
 ttggcactgg gagccgatga aggacgtggg aggctgcgtt atgcctcggg gagctgtcaa 540  
 10 ccgagcgtgg atccgaggat gtccgaatgg ggcaaccca 579  
  
 <210> 7  
 15 <211> 523  
 <212> DNA  
 <213> *Desulfomicrobium norvegicum*  
  
 <400> 7  
 20 aagtcgtaac aaggtagccg taggggaacc tgcggctgga tcacctcctt atcaagaatt 60  
 ctccaactcg ctatttactt gcaagggttc ttaccttgtc ggtttagaaa tgggcttgta 120  
 gctcaggtagg ttagagcgca cgcctgataa gcgtgaggtc ggaagttcaa gtcttcccag 180  
 25 gccaccatt tcttagtggg ggtgtagctc agctgggaga gcgcctgcct tgcacgcagg 240  
 aggtcatcag ttcgatcctg ttcacctcca ccattttcca actcgacaag aatttatgtt 300  
 30 gctagtcttt atcgtcagag tgtcttttga cactatggcg cccaagcata gcagcttgtg 360

atcattgaca gacgaatagg tgaagagaag agagttaaga tgtaagggc atacggtgga 420  
 tgccttggcg tcaggaggcg atgaaggacg tggaaggctg cgataagcct cggggagccg 480  
 5 tcaagcaggc ttgatccgg ggatttccga atggggcaac cca 523  
  
 <210> 8  
 10 <211> 662  
 <212> DNA  
 <213> Desulfitobacterium dehalogenans  
  
 <400> 8  
 15 aagtcgtaac aaggtagccg tatcggaagg tgcggctgga tcacctcctt tctaaggaga 60  
 catggtttct cgctagagaa atcatatcct aaggtcgatg ctttgaagaa cgtcacggaa 120  
 gcaatgaagt gaaacgattc aaagtcggag aagtcttaag agacttctta taggaaactt 180  
 20 ggcttgtgtg aagcatgagc agaagccata gttgacttat ccacggagtg gaaaaatgcc 240  
 gaagaggcaa aacggagcaa tccgtaaagt atgggaaatg aagctgttga agttaaagc 300  
 25 taacttggtg tttagttttg agggaccata aagtcttcta tatgggggta tagctcagct 360  
 gggagagcac ctgccttgca agcagggggg cagcggttcg atcccgtta cctccaccat 420  
 aatatatctg gtttctctaa tgtttattat gttctttgaa aactgcacag agaagaagaa 480  
 30

## SUBSTITUTE SPECIFICATION

aactgtaatt aggataacat ctaaaaccta gaagtggcgg caaaaaacgt ttggtcaagc 540  
tactaagggc gtacggtgga tgcctaggcg ctaagagtcg aagaaggacg cggcgagcgg 600  
5 cgaaacgcca cggggagcag taagcatgcc ttgatccgtg gatatccgaa tggggcaacc 660  
ca 662

10 <210> 9  
<211> 775  
<212> DNA  
<213> Desulfitobacterium hafniense

15 <400> 9  
aagtcgtaac aaggtagccg tatcggaagg tgcggctgga tcacctcctt tctaaggagc 60  
catgttcact ctggaagtga gcatatccta aggtcgatgc tttgaaggac gtcacggaag 120  
20 agatgaagtg aaacggttca aagctggaga agtctataga gacttcgaag tgccgaagag 180  
gcaaagcagg ggaaatctgc ataagatgac cctgaagtcg agtcaaact gttcaagcgc 240  
aagcttactt gttgtttagt tttgagagac cataaagtct tctatgggct tatagctcag 300  
25 ctggttagag cgcacgcctg ataagcgtga ggtcggtggt tcgagtccac ctaggcccac 360  
cattattcaa agaggataga gacccgaacc tccaaacaat acttcacgcc agaacatacc 420  
30 taacaggggt gagtattgag aggggagcgg ctcccctctc aacgacatgg gggtatagct 480

cagctggggg agcacctgcc ttgcaagcag ggggtcagcg gttcgatccc gcttacctcc 540  
 accatcatat actggtttct ctaatgttct ttgaaaactg cacagagaag aaaaaactgt 600  
 5 aatttaggat aacatctgaa aaacctgaat gtggcggaga cggttggtca agctactaag 660  
 ggcgtacggt ggatgcctag gcgctaagag tcgaagaagg acgcggcgag cggcgaaacg 720  
 10 ccacggggag cagtaagcat gccttgatcc gtggatatcc gaatggggca accca 775  
  
 <210> 10  
 <211> 422  
 15 <212> DNA  
 <213> Clostridium formicoaceticum  
  
 <400> 10  
 aagtcgtaac aaggtagccg tatcggaagg tgcggctgga tcacctcctt tctaaggaga 60  
 20 aaggctttta ctatactgtt taattttgag ggacttttgt ttctcaataa gcagacaacc 120  
 aaaatccttag attttgtgtt agtcgcttag ttaaaaattc tgtaattcac gacaatagtt 180  
 25 ttaaaccaac aaaaaatgaa tggaagaatt tttaacatct atagtctttt agattgttct 240  
 ttgaaaacta aacaatgata tgagaaaaga aaagctgaag taattcacta aagggtcaagt 300  
 tattaagggc aaaggggtgga tgccttgga ctaggagccg aagaaggacg tggttaagctg 360  
 30

## SUBSTITUTE SPECIFICATION

cgaaaagcca cggggagctg caagcaagta ttgatccgtg gatgtccgaa tggggaaacc 420

ca 422

5

<210> 11

<211> 699

<212> DNA

<213> Desulfuromonas chloroethenica

10

<400> 11

aagtcgtaac aaggtagccg taggggaacc tgcggcctgg atcacctcct ttctaaggag 60

cctccttact cgtaagagta aaggcatcct ggtcaatccc tcggcatggt ccgagcggat 120

15

gcccgc aaag catcattgtc tgctatttag ttttgagaga ccagaacctc gcaagagggtt 180

ttttgttctt tgagacaaga cgaacgaagg tggaagtggg ctagtagctc agctggctag 240

20

agcacacgac tgataatcgt gaggtcggag gttcgagtcc tccctggccc accagattat 300

ttgggggtgt agctcagttg ggagagcgcc tgccttgac gcaggagggtc atcggttcga 360

tcccgttcac ctccaccaga tgttctgtca ggagtaagga gagaagagtg aggagtacac 420

25

ctcaccctaa cgccttacgc ctcaccgatt ttcttgttct ttggcaattg cataagactg 480

atac gatgca cgaagtaaag cgttgcgtac gcaagtacgt gacacgcgaa ggtagcaaca 540

30

cgatcgctta agtagaagac ttttttatgg tcaagctatt aagggcgtag ggtggatgcc 600

ttggcatcgg gaggcgatga aggacgtggt aagctgcgaa aagcttcggt aagccgctaa 660  
 acaggctttg acccgagat gtccgaatgg ggaaaccca 699  
 5  
 <210> 12  
 <211> 391  
 <212> DNA  
 10 <213> *Acetobacterium woodii*  
 <400> 12  
 aagtcgtaac aaggtagccg tatcggaagg tgcggctgga tcacctcctt tctagggat 60  
 15 acaggaagtc atggtactat tttcttttgt atgaccatct ggttatgcaa aaacagttaa 120  
 agaaggcatc ttaggatgca ttttttaacg ggacaaatac cggagtagtg gtagcaggtc 180  
 ccaatcgatc attgaaaaca gcatagtgtg taaataaaat tataaaatac aatttcttaa 240  
 20 cacgaaaacg taaattatta ggatcaagaa gaaaagagca cagggtgaat gccttggcaa 300  
 tcagagccga cgaaggacgc gacaagctgc gaaaagctac gtgtaggtgc acataaccgt 360  
 25 taaagcgtag atatccgaat ggggcaaccc a 391  
 <210> 13  
 <211> 608  
 30 <212> DNA

## SUBSTITUTE SPECIFICATION

<213> Dehalobacter restrictus

<400> 13

5 aagtcgtaac aaggtagccg tatcggaagg tgcggctgga tcacctcctt tctaaggaga 60

accgattgaa gctagacttc aatctactcc aaggctcgga cttagagtaa agcagtgcaa 120

actggactga ctctcaagta aggtgagttt agcaatttat ttcttggtgt ttagttttga 180

10 gtgacctgag cacagtaatg tgtaaaagaa acactcaaata aatgtccata catatcagag 240

attctggtaa gtatggaaaa acatccttgt tctttgaaaa ctgcacaacg agaaaagcag 300

15 aatgcgaaat gcgaaagtaa agacaacgaa atggcggttca aattctaaag cgcaaaaact 360

taacgttttc gcgcgtggca aatttgaact taggagcatc tatgctccgt caggtaagaa 420

ttactaagcg cataggagac attcaaatca tctataacaa gtcgaggaag aaccagaagg 480

20 tcaagatata aagggcatac ggtggatgcc ttggcgccaa gagccgaaga aggacgcggt 540

taacagcgaa atgccacggg gagtcgtaag caggcataga tccgtggatg tccgaatggg 600

gaaaccca 608

25

<210> 14

<211> 689

<212> DNA

30 <213> Desulfitobacterium sp. strain PCE1

<400> 14

aagtcgtaac aaggtagccg tatcggaagg tgcggctgga tcacctcctt tctaaggaga 60

5 catggtttct cgctagagaa atcatatcct aaggctgatg ctttgaagga cgatcatggaa 120

gcaatgaagt gaaacgattc aaagttggag aagtcttaag agacttctga aagccgaaga 180

ggcaaaacgg agcaatccgt aaagtatgag aatgaagct gttgaagtta aaagctaact 240

10 tgttgtttag ttttgaggga ccataaagtc ttctatgggc ttatagctca gctgggttaga 300

gcgcacgcct gataagcgtg aggtcgggtg ttcgagtcca cctaggccca ccataaaaga 360

15 ttgatattgt gggggtatag ctgagctggg agagcacctg ccttgcaagc aggggggtcag 420

cggttcgacc ccgcttacct ccaccataat atatctgggt tctctaattgt ttattatggt 480

ctttgaaaac tgcacagaga agaagaaaac tgtaattagg ataacatcta aaacctagaa 540

20 gtggcggcaa aaaacgtttg gtcaagctac taagggcgta cggtggatgc ctaggcgcta 600

agagtcgaag aaggacgcgg cgagcggcga aacgccacgg ggagcagtaa gcatgccttg 660

25 atccgtggat atccgaatgg ggcaacca 689

<210> 15

<211> 468

30 <212> DNA

<213> Desulfotobacterium frappieri TCE1

<400> 15

aagtcgtaac aaggtagccg tatcggaagg tgcggctgga tcacctcctt tctaaggagt 60

5

tcataaggac tcacactggt ttgtttataa atttgattcg ctgaatttcc agaatcaatc 120

acattgaaat cctttggatt tcaattgtta attgtgcact gtgaaatgcg aattgataac 180

10 gtgggggtgt agctcagttg ggagagcacc tgccttgcaa gcaggggggtc aggagttcga 240

ctctcctcat ctccaccaa gacattcata gtttaaatta attatgaatt gtttaaactg 300

aacattgaaa actacaaata tacaataaac atgaaatagg tcaagttatt aagggcgtag 360

15

ggcgaatgcc ttggcaccaa gagccgatga aggacgggat aagcaccgat atgcttcggg 420

gagtcgcaaa tagacattga tccggagatt tccgaatggg gcaaccga 468

20

<210> 16

<211> 511

<212> DNA

<213> Acetobacterium woodii

25

<400> 16

aagtcgtaac aaggtagccg tatcggaagg tgcggctgga tcacctcctt tctaaggaaa 60

acagggagtc atggtactat tttcttttgt atgaccttta ggttatataa aaggatcgta 120

30

## SUBSTITUTE SPECIFICATION

gtttctggca attttcttta tttttataaa gatgaaaatt gacataaaact gcgttagttt 180  
 ttacaccgct catgcgctaa cgcttaatga gctgccaat tgaaaatttg ggtaaaaacg 240  
 5 tcaaagtggc cattgaaaac agcatagtgt attaaaaaaa catacaattt cagatgttaa 300  
 caacataaga aaaacgtaag ttaaaggatc gtagtttttag gactacaggc gactgacgaa 360  
 gttctactgt cagttgttaa ggatcaagaa atgaagggca cagggcggtat gccttggcac 420  
 10 tcagagccga tgaaggacgc gacaagctgc gaaaagctgc gtgaagggtgc acataaccgt 480  
 tgaagcgag atatccgaat ggggcaaccc a 511  
 15  
 <210> 17  
 <211> 471  
 <212> DNA  
 <213> Desulfomonile tiedjei DCB-1  
 20  
 <400> 17  
 aagtcgtaac aaggtagccg taggggaacc tgcggctgga tcacctcctt tctaagggtg 60  
 aaccttagta tccgaacgca cacatctgct attcagttct gagagggtga cgataacggc 120  
 25  
 ttcgggccta tagctcagtt cggttagagc gcacgcctga taagcgtgag gtcgttggtt 180  
 caattccaac tagggccacc acgcctctat cgggggtgta gctcagctgg gagagcacct 240  
 30 gctttgcaag caggggggtca tcggttcgaa tccgttcacc tccaccagtt ctttgacaat 300

cgaatagggtt ttagatcgag gatactcata tathtagga atcaagctac taagggccta 360

cggtaggatgc cttggcatcg gaagacgatg aaggacgtgg ttagctgcga taagcctcgg 420

5 ggagttgcta aacacactgt gatccgggga tttccgaatg gggcaacca a 471

<210> 18

10 <211> 847

<212> DNA

<213> Dehalococcoides ethenogenes 195

<400> 18

15 ggactggtaa ttgggacgaa gtcgtaacaa ggtagccgta gcggaagctg cggctggatc 60

acctcctttc taaggataat tggcctcgtg cctattaacc taggtcgata tccgacttaa 120

aacggatact tctcttttct ttccgctatc cagggggttaa ggtgttagtg ttataagggg 180

20 ataaaaatta ctttctcctg attgctaacc tgtatctatc ccgctttgaa actcatgtag 240

gttttgtag gcattttggg ctgaaggact tgcgctaagc gtcctgtttg ctatattata 300

25 ttgacgtttt tcgggtagta tttcgaagat acccaatctg tctgttgta tcaatcgggc 360

cattagctca gctggtaga gcgcagtcct gataagactg aggtccttgg ttcgagacca 420

agatggccca ccataaagct aaaacttagc ataatcaaac gaataaaaaat acctgctgat 480

30

taaccggttt ttcgcgagag aaccggtttt ttataaaga agcaggaaga taatgtctat 540  
 tatttcattt taggtgaata acctgcgctg caaattggta tagtttagta ttcaccgggt 600  
 5 tattgggcgg gcaaaaaaat ctttgtgaaa tgaaaatatt tactttaaaa agactgattg 660  
 ccggaggtaa tataacagta tgataagtaa tgaaggttca gaaaaagtat tatctccgga 720  
 agaacaggct aaattacttg gcctgcttaa agggcgtttt gagcaaaata tacaccgcca 780  
 10 cgagggcatt gtttgggcta aggtgcaaga aaagcttaag gcagataccc ttaaattgtg 840  
 gtcattg 847  
 15  
 <210> 19  
 <211> 40  
 <212> DNA  
 <213> Dehalospirillum multivorans  
 20  
 <400> 19  
 aggctgtaag aggcgatgaa ggacgtacta gactgcgata 40  
 25  
 <210> 20  
 <211> 40  
 <212> DNA  
 <213> Dehalospirillum multivorans  
 30  
 <400> 20

gctgtaagag gcgatgaagg acgtactaga ctgcgataag 40

<210> 21

5 <211> 40

<212> DNA

<213> Dehalospirillum multivorans

<400> 21

10 cggttggatc acctcctttc tagagtatag gggcactatc 40

<210> 22

<211> 40

15 <212> DNA

<213> Dehalospirillum multivorans

<400> 22

gcggttggat cacctccttt ctagagtata ggggcactat 40  
20

<210> 23

<211> 40

<212> DNA

25 <213> Dehalospirillum multivorans

<400> 23

tgcggttggg tcacctcctt tctagagtat aggggcacta 40  
30

	<210>	24	
	<211>	40	
	<212>	DNA	
	<213>	Dehalospirillum multivorans	
5			
	<400>	24	
		ggtcagcggg tgcgacccgc tattctccac catttttttag	40
10	<210>	25	
	<211>	40	
	<212>	DNA	
	<213>	Dehalospirillum multivorans	
15	<400>	25	
		gaggtcagcg gttcgatccc gctattctcc accatttttt	40
	<210>	26	
20	<211>	40	
	<212>	DNA	
	<213>	Desulfotobacterium frappieri	
	<400>	26	
25		ctggagaagt ctgaagagac ttcgaaatgc cgaagaggca	40
	<210>	27	
	<211>	40	
30	<212>	DNA	

	<213>	Desulfitobacterium frappieri	
	<400>	27	
5		agctggagaa gtctgaagag acttcgaaat gccgaagagg	40
	<210>	28	
	<211>	40	
	<212>	DNA	
10	<213>	Desulfitobacterium frappieri	
	<400>	28	
		agtctgaaga gacttcgaaa tgccgaagag gcaaagcagg	40
15	<210>	29	
	<211>	40	
	<212>	DNA	
	<213>	Desulfitobacterium frappieri	
20	<400>	29	
		tgaagagact tcgaaatgcc gaagaggcaa agcaggggaa	40
25	<210>	30	
	<211>	40	
	<212>	DNA	
	<213>	Desulfitobacterium frappieri	
30	<400>	30	

gaagagactt cgaaatgccg aagaggcaaa gcaggggaaa 40

<210> 31

5 <211> 40

<212> DNA

<213> Actinomycetales Sm-1

<400> 31

10 gcgacgatga tccgcgaaac aagaggacat ggttttcttg 40

<210> 32

<211> 40

15 <212> DNA

<213> Actinomycetales Sm-1

<400> 32

20 tgatccgcga aacaagagga catggttttc ttgcggtagg 40

<210> 33

<211> 40

<212> DNA

25 <213> Actinomycetales Sm-1

<400> 33

30 caagaggaca tggttttctt gcggtagggg ttgttggtg 40

<210> 34  
<211> 40  
<212> DNA  
<213> Actinomycetales Sm-1

5

<400> 34  
tcagcgacga tgatccgcga aacaagagga catggttttc 40

10 <210> 35  
<211> 40  
<212> DNA  
<213> Actinomycetales Sm-1

15 <400> 35  
gaggacatgg ttttcttgcg gtaggggttg ttgtgtgttg 40

20 <210> 36  
<211> 40  
<212> DNA  
<213> Rhodococcus rhodococcus

25 <400> 36  
gttttgtcag cgacgatgat cggaacgaa ggggttgttt 40

30 <210> 37  
<211> 40  
<212> DNA

	<213>	Rhodococcus rhodococcus	
	<400>	37	
5		acgatgatcg ggaacgaagg ggttgtttct tcttccggtta	40
	<210>	38	
	<211>	40	
	<212>	DNA	
10	<213>	Rhodococcus rhodococcus	
	<400>	38	
		tttgtcagcg acgatgatcg ggaacgaagg ggttgtttct	40
15	<210>	39	
	<211>	40	
	<212>	DNA	
	<213>	Rhodococcus rhodococcus	
20	<400>	39	
		tcagcgacga tgatcgggaa cgaaggggtt gtttcttctt	40
25	<210>	40	
	<211>	40	
	<212>	DNA	
	<213>	Rhodococcus rhodococcus	
30	<400>	40	

ggggttgttt cttcttccgg taccggttgt tgtgtgttgt 40

<210> 41

5 <211> 40

<212> DNA

<213> Xanthobacter flavus

<400> 41

10 catcgtgaat agggcattga tcgactgtac cgtggcaaca 40

<210> 42

<211> 40

15 <212> DNA

<213> Xanthobacter flavus

<400> 42

acatcgtgaa tagggcattg atcgactgta ccgtggcaac 40

20

<210> 43

<211> 40

<212> DNA

25 <213> Xanthobacter flavus

<400> 43

ggctcttgagc gtcttgccg cgaatatctg tttcgcatgt 40

30

<210> 44  
<211> 40  
<212> DNA  
<213> Xanthobacter flavus

5

<400> 44  
atgacatcgt gaatagggca ttgatcgact gtaccgtggc 40

10 <210> 45  
<211> 40  
<212> DNA  
<213> Xanthobacter flavus

15 <400> 45  
ctcttgggggt cttgagcgtc ttgtccgcga atatctgttt 40

20 <210> 46  
<211> 40  
<212> DNA  
<213> Mycobacterium L1

25 <400> 46  
ggctctggggg gtgtgtttgt gtgcttttga tgtgcagttt 40

30 <210> 47  
<211> 40  
<212> DNA

<213> Mycobacterium L1

<400> 47

gtctggggggg tgtgtttgtg tgcttttgat gtgcagtttc 40

5

<210> 48

<211> 40

<212> DNA

10 <213> Mycobacterium L1

<400> 48

attgtcaggc gattcgttgg atggcccttt cacctgtagt 40

15

<210> 49

<211> 40

<212> DNA

<213> Desulfomicrobium norvegicum

20

<400> 49

gcgccaagc atagcagctt gtgatcattg acagacgaat 40

25 <210> 50

<211> 40

<212> DNA

<213> Desulfomicrobium norvegicum

30 <400> 50

cagttcgatc ctgttcacct ccaccatttt ccaactcgac 40

<210> 51

5 <211> 40

<212> DNA

<213> Desulfomicrobium norvegicum

<400> 51

10 ctatggcgcc caagcatagc agcttgtgat cattgacaga 40

<210> 52

<211> 40

15 <212> DNA

<213> Desulfomicrobium norvegicum

<400> 52

tatggcgccc aagcatagca gcttgtgatc attgacagac 40  
20

<210> 53

<211> 40

<212> DNA

25 <213> Desulfomicrobium norvegicum

<400> 53

actatggcgc ccaagcatag cagcttgtga tcattgacag 40  
30

	<210>	54	
	<211>	40	
	<212>	DNA	
	<213>	Desulfitobacterium dehalogenans	
5			
	<400>	54	
		acggagtgga aaaatgccga agaggcaaaa cggagcaatc	40
10	<210>	55	
	<211>	40	
	<212>	DNA	
	<213>	Desulfitobacterium dehalogenans	
15	<400>	55	
		cacggagtgg aaaaatgccg aagaggcaaa acggagcaat	40
	<210>	56	
20	<211>	40	
	<212>	DNA	
	<213>	Desulfitobacterium dehalogenans	
	<400>	56	
25		tatccacgga gtggaaaaat gccgaagagg caaaacggag	40
	<210>	57	
	<211>	40	
30	<212>	DNA	

	<213>	Desulfitobacterium dehalogenans	
	<400>	57	
5		agcatgagca gaagccatag ttgacttatc cacggagtgg	40
	<210>	58	
	<211>	40	
	<212>	DNA	
10	<213>	Desulfitobacterium hafniense	
	<400>	58	
		ctggagaagt ctatagagac ttcgaagtgc cgaagaggca	40
15	<210>	59	
	<211>	40	
	<212>	DNA	
	<213>	Desulfitobacterium hafniense	
20	<400>	59	
		agctggagaa gtctatagag acttcgaagt gccgaagagg	40
25	<210>	60	
	<211>	40	
	<212>	DNA	
	<213>	Desulfitobacterium hafniense	
30	<400>	60	

	agtcctataga gacttcgaag tgccgaagag gcaaagcagg	40
	<210> 61	
5	<211> 40	
	<212> DNA	
	<213> Desulfitobacterium hafniense	
	<400> 61	
10	tatagagact tcgaagtgcc gaagaggcaa agcaggggaa	40
	<210> 62	
	<211> 40	
15	<212> DNA	
	<213> Desulfitobacterium hafniense	
	<400> 62	
20	atagagactt cgaagtgccg aagaggcaaa gcaggggaaa	40
	<210> 63	
	<211> 40	
	<212> DNA	
25	<213> Clostridium formicoaceticum	
	<400> 63	
30	ggtcaagtta ttaagggcaa aggggtggatg ccttggcact	40

	<210>	64	
	<211>	40	
	<212>	DNA	
	<213>	Clostridium formicoaceticum	
5	<400>	64	
		gtgcggctgg atcacctcct ttctaaggag aaaggctttt	40
10	<210>	65	
	<211>	40	
	<212>	DNA	
	<213>	Clostridium formicoaceticum	
15	<400>	65	
		gtgccaaaggc atccaccctt tgcccttaat aacttgacct	40
	<210>	66	
20	<211>	40	
	<212>	DNA	
	<213>	Clostridium formicoaceticum	
	<400>	66	
25		ctcctagtgc caaggcatcc accctttgcc cttataact	40
	<210>	67	
	<211>	40	
30	<212>	DNA	

<213> Clostridium formicoaceticum

<400> 67

gcggctggat cacctccttt ctaaggagaa aggcttttac 40

5

<210> 68

<211> 40

<212> DNA

10 <213> Clostridium formicoaceticum

<400> 68

cctagtgcca aggcattcac cctttgccct taataacttg 40

15

<210> 69

<211> 40

<212> DNA

<213> Desulfuromonas chloroethenica

20

<400> 69

ctgtcaggag taaggagaga agagtgagga gtacacctca 40

25 <210> 70

<211> 40

<212> DNA

<213> Desulfuromonas chloroethenica

30 <400> 70

	gtgacacgcg aaggtagcaa cacgatcgct taagtagaag	40
	<210> 71	
5	<211> 40	
	<212> DNA	
	<213> Desulfuromonas chloroethenica	
	<400> 71	
10	gagtaaggag agaagagtga ggagtagacc tcaccctaac	40
	<210> 72	
	<211> 40	
15	<212> DNA	
	<213> Desulfuromonas chloroethenica	
	<400> 72	
20	aggagtaagg agagaagagt gaggagtaca cctcacccta	40
	<210> 73	
	<211> 40	
	<212> DNA	
25	<213> Desulfuromonas chloroethenica	
	<400> 73	
30	agtaaggaga gaagagtgag gaggtagacct caccctaacg	40

	<210>	74	
	<211>	40	
	<212>	DNA	
	<213>	Desulfuromonas chloroethenica	
5			
	<400>	74	
		gacacgcgaa ggtagcaaca cgatcgctta agtagaagac	40
10	<210>	75	
	<211>	40	
	<212>	DNA	
	<213>	Acetobacterium woodii	
15	<400>	75	
		ttaacgggac aaataccgga gtagtggttag caggtcccaa	40
	<210>	76	
20	<211>	40	
	<212>	DNA	
	<213>	Acetobacterium woodii	
	<400>	76	
25		ccggagtagt ggtagcaggt cccaatcgat cattgaaaac	40
	<210>	77	
	<211>	40	
30	<212>	DNA	

<213> Acetobacterium woodii

<400> 77

gacaaatacc ggagtagtgg tagcaggtcc caatcgatca

40

5

<210> 78

<211> 40

<212> DNA

10 <213> Acetobacterium woodii

<400> 78

ttttaacggg acaaataccg gagtagtggt agcaggtccc

40

15

<210> 79

<211> 40

<212> DNA

<213> Acetobacterium woodii

20

<400> 79

ttttaacggga caaataccgg agtagtggtg gcaggtccca

40

25 <210> 80

<211> 40

<212> DNA

<213> Dehalobacter restrictus

30 <400> 80

aagggtcaaga tataaagggc atacggtgga tgccttggcg 40

<210> 81

5 <211> 40

<212> DNA

<213> Dehalobacter restrictus

<400> 81

10 gaagggtcaag atataaaggg catacggtgg atgccttggc 40

<210> 82

<211> 40

15 <212> DNA

<213> Dehalobacter restrictus

<400> 82

aagatataaa gggcatacgg tggatgcctt ggcgccaaga 40  
20

<210> 83

<211> 40

<212> DNA

25 <213> Dehalobacter restrictus

<400> 83

gcgcgtggca aatttgaact taggagcatc tatgctccgt 40

30

<210> 84  
<211> 40  
<212> DNA  
<213> Dehalobacter restrictus

5

<400> 84  
tcaagatata aagggcatac ggtggatgcc ttggcgccaa 40

10 <210> 85  
<211> 40  
<212> DNA  
<213> Dehalobacter restrictus

15 <400> 85  
tcgcgcgtgg caaatttgaa cttaggagca tctatgctcc 40

20 <210> 86  
<211> 40  
<212> DNA  
<213> Dehalobacter restrictus

25 <400> 86  
cgcgtggcaa atttgaactt aggagcatct atgctccgtc 40

30 <210> 87  
<211> 40  
<212> DNA

	<213>	Desulfitobacterium sp. strain PCE1	
	<400>	87	
5		gtccacctag gccaccata aaagattgat attgtggggg	40
	<210>	88	
	<211>	40	
	<212>	DNA	
10	<213>	Desulfitobacterium sp. strain PCE1	
	<400>	88	
		agattgatat tgtgggggta tagctcagct gggagagcac	40
15	<210>	89	
	<211>	40	
	<212>	DNA	
	<213>	Desulfitobacterium sp. strain PCE1	
20	<400>	89	
		attgatattg tgggggtata gctcagctgg gagagcacct	40
25	<210>	90	
	<211>	40	
	<212>	DNA	
	<213>	Desulfitobacterium sp. strain PCE1	
30	<400>	90	

	agagacttct gaaagccgaa gaggcaaac ggagcaatcc	40
	<210> 91	
5	<211> 40	
	<212> DNA	
	<213> Desulfitobacterium sp. strain PCE1	
	<400> 91	
10	gacttctgaa agccgaagag gcaaacgga gcaatccgta	40
	<210> 92	
	<211> 40	
15	<212> DNA	
	<213> Desulfitobacterium frappieri TCE1	
	<400> 92	
20	atgcgaattg ataacgtggg ggtgtagctc agttgggaga	40
	<210> 93	
	<211> 40	
	<212> DNA	
25	<213> Desulfitobacterium frappieri TCE1	
	<400> 93	
30	ggataagcac cgatatgctt cggggagtcg caaatagaca	40

<210> 94  
<211> 40  
<212> DNA  
<213> Desulfitobacterium frappieri TCE1

5  
<400> 94  
gatatgcttc ggggagtcgc aaatagacat tgatccggag 40

10 <210> 95  
<211> 40  
<212> DNA  
<213> Desulfitobacterium frappieri TCE1

15 <400> 95  
gcaccgatat gcttcgggga gtcgcaaata gacattgatc 40

20 <210> 96  
<211> 40  
<212> DNA  
<213> Desulfitobacterium frappieri TCE1

25 <400> 96  
gcactgtgaa atgcgaattg ataacgtggg ggtgtagctc 40

30 <210> 97  
<211> 40  
<212> DNA

<213> Acetobacterium woodii

<400> 97

gtcagttgtt aaggatcaag aaatgaaggg cacagggcgg 40

5

<210> 98

<211> 40

<212> DNA

10 <213> Acetobacterium woodii

<400> 98

gttggttaagg atcaagaaat gaagggcaca ggcggatgc 40

15

<210> 99

<211> 40

<212> DNA

<213> Acetobacterium woodii

20

<400> 99

ttgttaagga tcaagaaatg aagggcacag ggcggatgcc 40

25 <210> 100

<211> 40

<212> DNA

<213> Desulfomonile tiedjei DCB-1

30 <400> 100

	gattgtcaaa gaactggtgg aggtgaacgg attcgaaccg	40
	<210> 101	
5	<211> 40	
	<212> DNA	
	<213> Desulfomonile tiedjei DCB-1	
	<400> 101	
10	cgattgtcaa agaactggtg gaggtgaacg gattcgaacc	40
	<210> 102	
	<211> 40	
15	<212> DNA	
	<213> Desulfomonile tiedjei DCB-1	
	<400> 102	
20	gtcaacctct cagaactgaa tagcagatgt gtgcgttcgg	40
	<210> 103	
	<211> 40	
	<212> DNA	
25	<213> Desulfomonile tiedjei DCB-1	
	<400> 103	
30	taaccgaact gagctatagg cccgaagccg ttatcgtaa	40

	<210>	104	
	<211>	40	
	<212>	DNA	
	<213>	Desulfomonile tiedjei DCB-1	
5			
	<400>	104	
		cgtcaacctc tcagaactga atagcagatg tgtgcgttcg	40
10	<210>	105	
	<211>	40	
	<212>	DNA	
	<213>	Desulfomonile tiedjei DCB-1	
15	<400>	105	
		ccgaagccgt tatcgtcaac ctctcagaac tgaatagcag	40
	<210>	106	
20	<211>	40	
	<212>	DNA	
	<213>	Dehalococcoides ethenogenes 195	
	<400>	106	
25		tgagcaaaat atacaccgcc acgagggcat tgtttgggct	40
	<210>	107	
	<211>	40	
30	<212>	DNA	

<213> Dehalococcoides ethenogenes 195

<400> 107

ttatcaatcg ggccattagc tcagctgggt agagcgcagt 40

5

<210> 108

<211> 40

<212> DNA

10 <213> Dehalococcoides ethenogenes 195

<400> 108

cgtcacgtca tgaaagccgg taacacttga agtcgatgtg 40

15

<210> 109

<211> 40

<212> DNA

<213> Dehalococcoides ethenogenes 195

20

<400> 109

gccgcggtaa tacgtaggaa gcaagcggtta tccggattta 40

25 <210> 110

<211> 40

<212> DNA

<213> Dehalococcoides ethenogenes 195

30 <400> 110

attttgggct gaaggacttg cgctaagcgt cctgtttgct 40

<210> 111  
5 <211> 40  
<212> DNA  
<213> Dehalococcoides ethenogenes 195

<400> 111  
10 ctggatcacc tcctttctaa ggataattgg cctcgtgcct 40

<210> 112  
<211> 40  
15 <212> DNA  
<213> Dehalococcoides ethenogenes 195

<400> 112  
gtccttggtt cgagaccaag atggcccacc ataaagctaa 40  
20

<210> 113  
<211> 40  
<212> DNA  
25 <213> Dehalococcoides ethenogenes 195

<400> 113  
ggactggtaa ttgggacgaa gtcgtaacaa ggtagccgta 40  
30

<210> 114

<211> 40

<212> DNA

<213> Dehalococcoides ethenogenes 195

5

<400> 114

tgtttggtta agtcctgcaa cgagcgcaac ccttggtgct 40

10 <210> 115

<211> 40

<212> DNA

<213> Dehalococcoides ethenogenes 195

15 <400> 115

gtcctgataa gactgaggtc cttgggtcga gaccaagatg 40

<210> 116

20 <211> 20

<212> DNA

<213> Artificial

<220>

25 <223> Sense primer 27F for PCR

<400> 116

agagtttgat cctggctcag 20

30

<210> 117

<211> 16

<212> DNA

<213> Artificial

5

<220>

<223> Antisense primer 132R for PCR

<400> 117

10 gggttbcccc attcrg

16

<210> 118

<211> 20

15 <212> DNA

<213> Artificial

<220>

<223> Antisense primer 341R for PCR

20

<400> 118

caatgaccac aatttaaggg

20